


THE SPACE ONTOLOGY

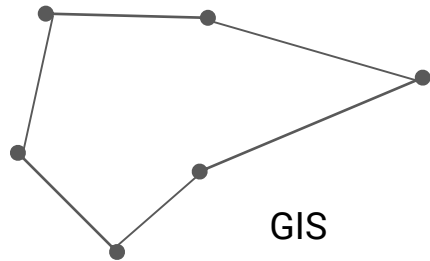
***Secret plans for a universal,
domain-independent model
for spatial Linked Data***

There should be a domain independent web ontology for spatial data, allowing unification of the many different models, exchange formats and storage formats currently in use.

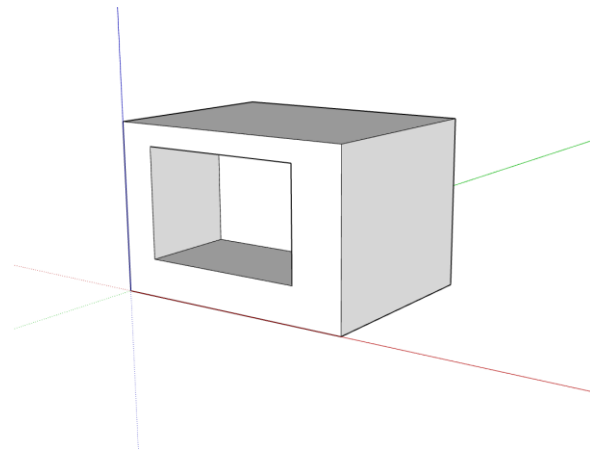
A scene from Star Wars: The Clone Wars showing Anakin Skywalker with a concerned expression, carrying Yoda on his shoulders. They are in a dark, swampy environment with many thin, brown tree trunks. Yoda is looking over his shoulder at Anakin.

OK... but
WHY?

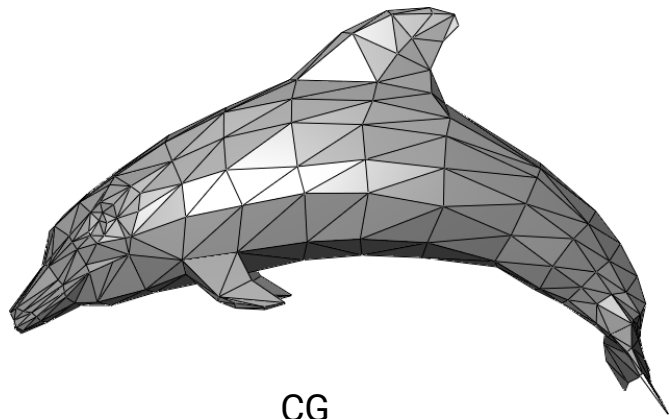
Frustration!



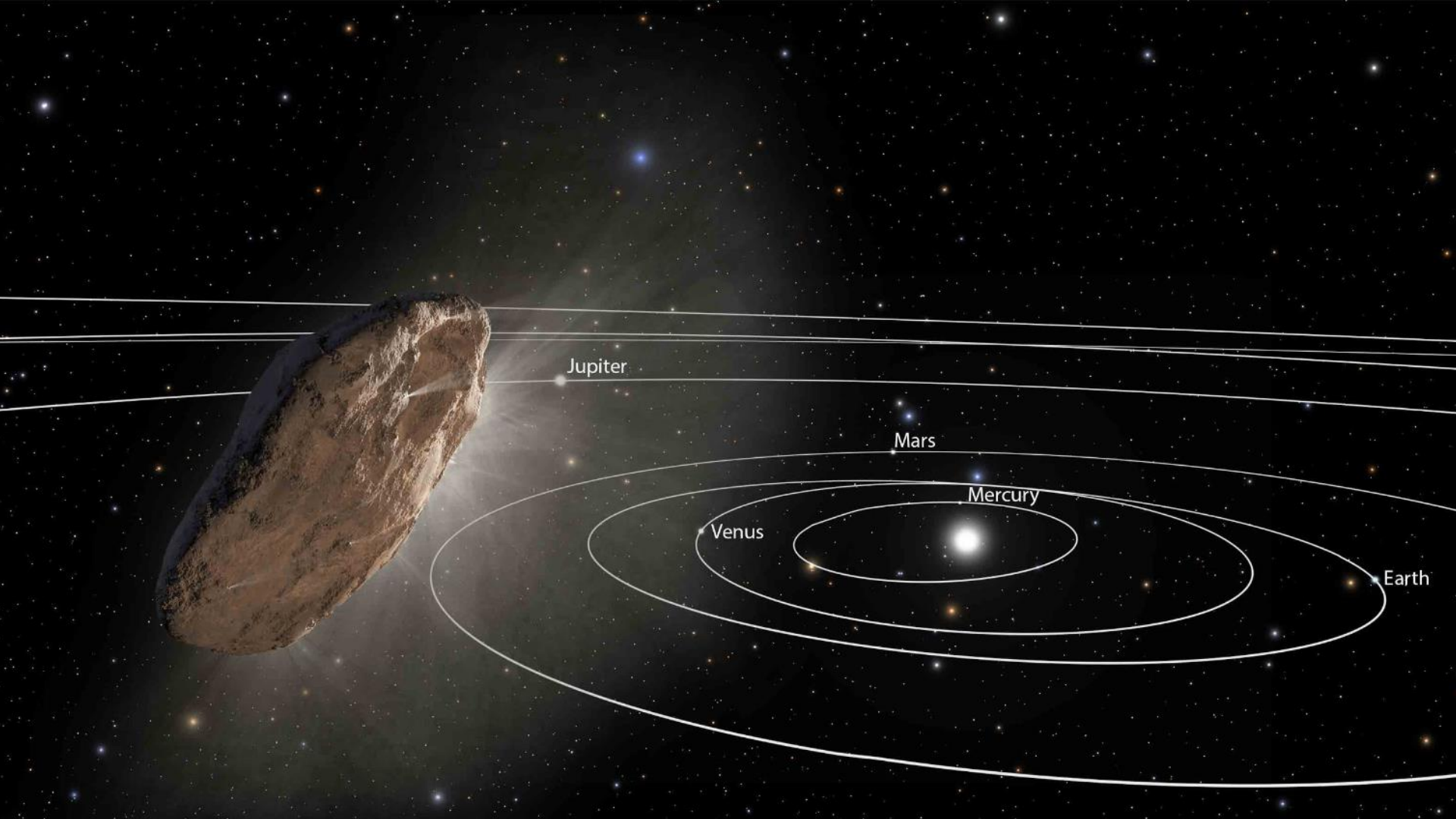
GIS



CAD/BIM



CG



Jupiter

Mars

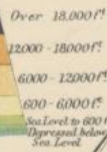
Mercury

Venus

Earth

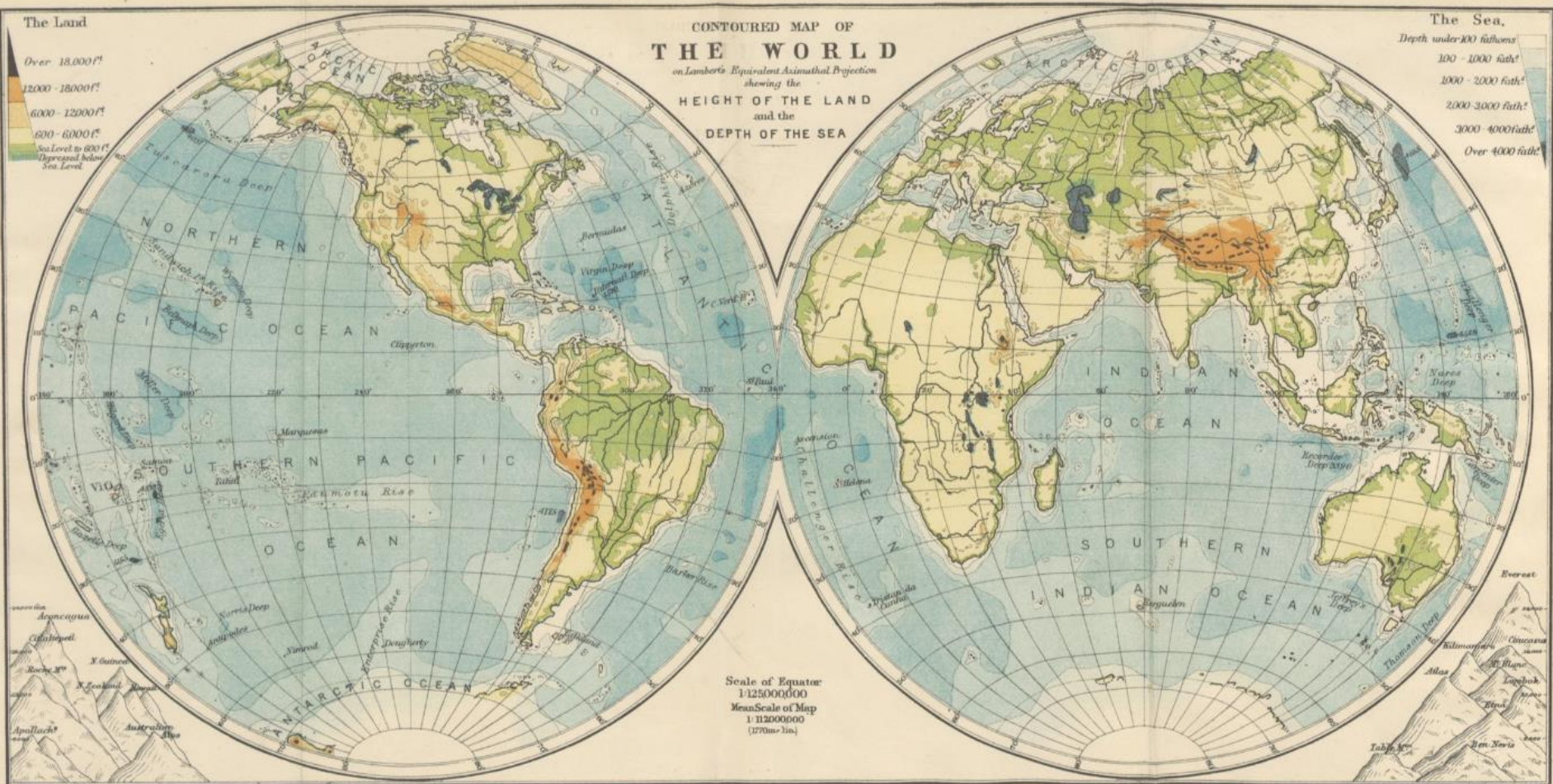
Saturn

The Land



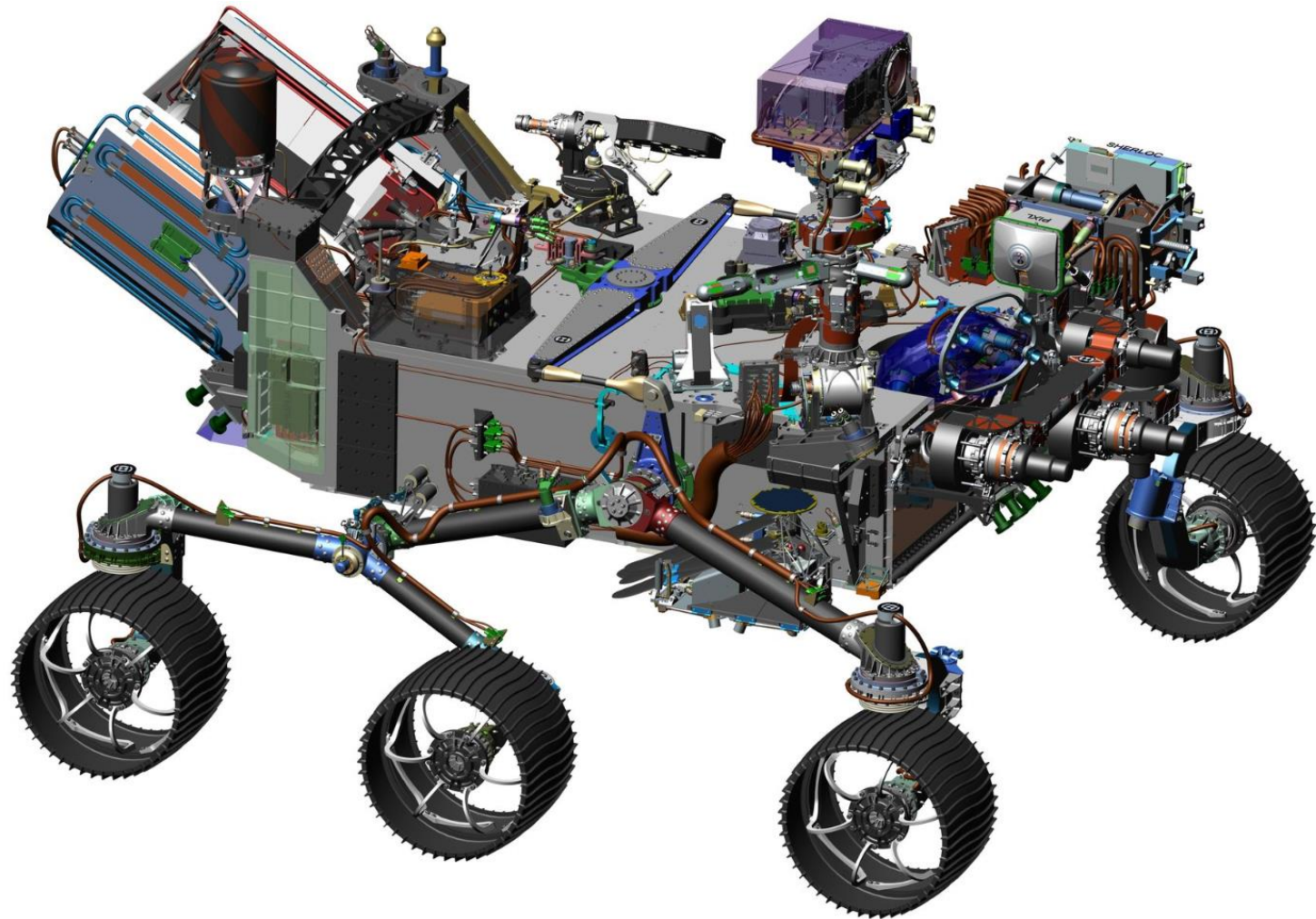
CONTOURED MAP OF THE WORLD on Lambert's Equivalent Azimuthal Projection showing the HEIGHT OF THE LAND and the DEPTH OF THE SEA

The Sea,

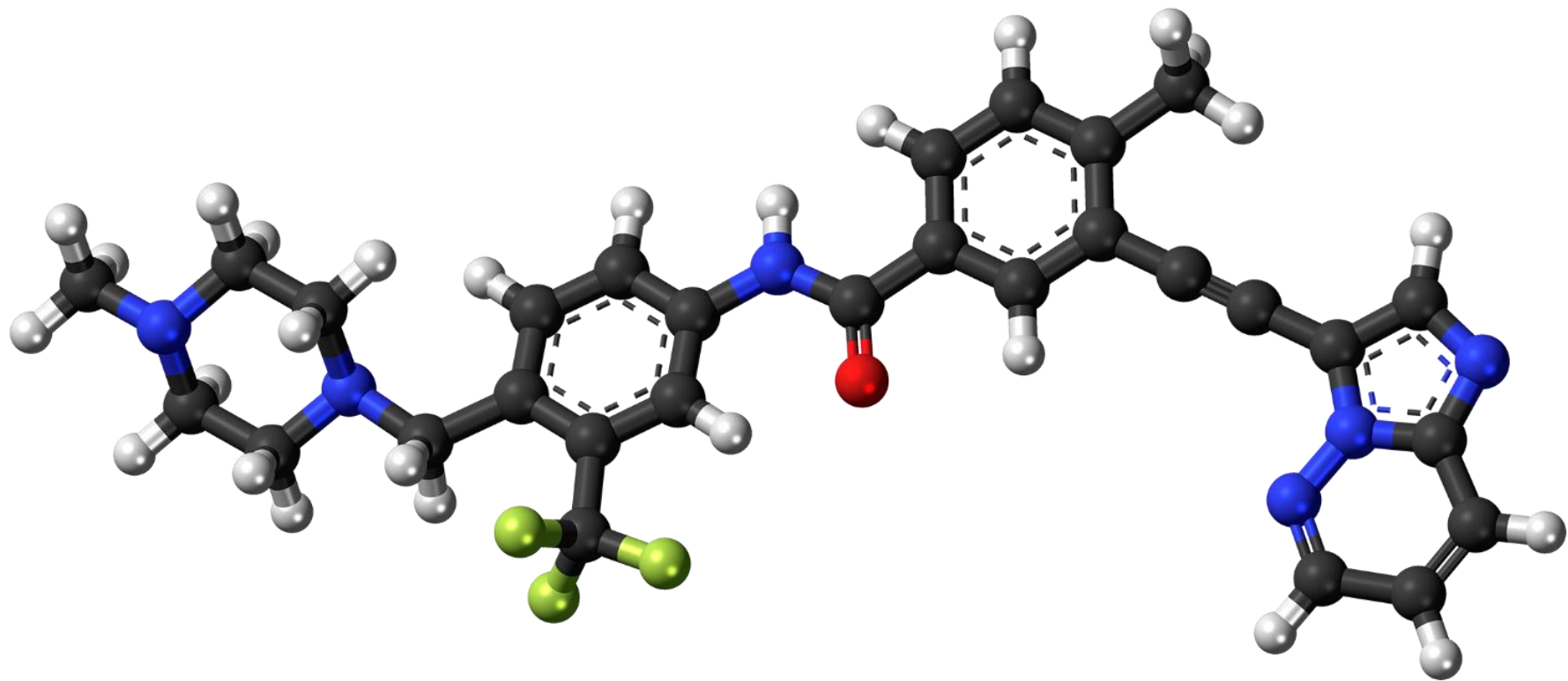


Scale of Equator
1:125,000,000
Mean Scale of Map
1:112,000,000
(1770 mi.)











**Linked Data should enable
cross-domain
interoperability.**

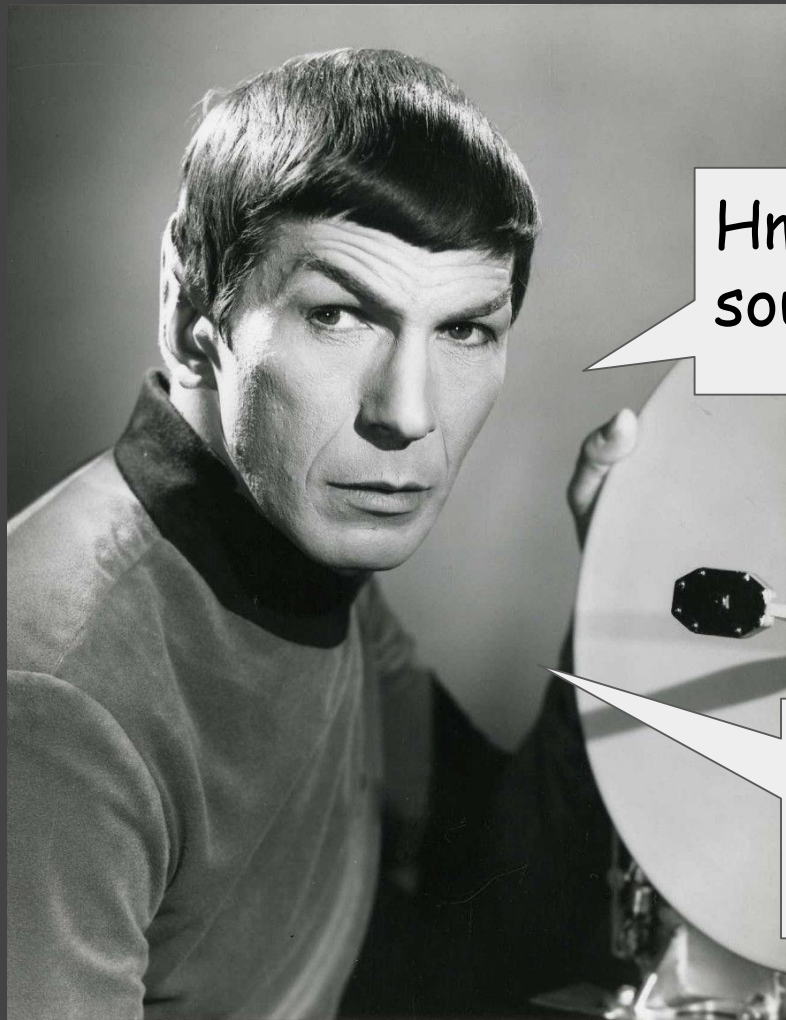
**So the web needs a universal
model for spatial data.**

We need software for

- ***storage***
- ***indexing***
- ***retrieval***
- ***compression***
- ***analysis***
- ***processing***
- ***transfer***
- ***querying***
- ***visualization***

of spatial data.

Can you imagine how having a single model would help in all those areas?



Hmm... that
sounds **logical**.

But how can
we make it
happen?

<https://www.w3.org/TR/owl-time/>

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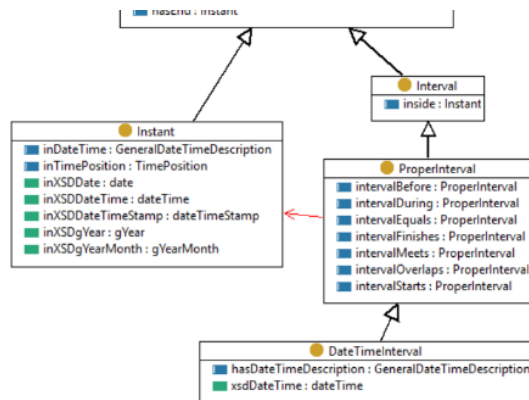
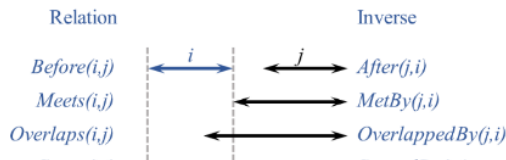


Figure 1 Core model of temporal entities.

The class `:ProperInterval` also has one subclass, `:DateTimeInterval`. The position and extent of a `:DateTimeInterval` is an element in a `:GeneralDateTimeDescription`.

Relations between intervals are the critical logic provided by Allen's analysis, and implemented in the ontology. These can be defined in a relatively straightforward fashion in terms of `:before` and identity on the beginning and end points. The thirteen elementary relations shown below are the second key contribution of Allen's analysis. These support unambiguous expression of all possible relations between temporal entities, which allows the computation of any relative position or sequence. Note that the standard interval calculus assumes all intervals are proper, so their beginning and end are different.



What could be in a spatial ontology?

Three basic ingredients seem to be needed:

1. The notion of a **spatial reference system**.
2. The notion of **coding** the **shape** or **spatial distribution** of a thing in **numbers**.
3. The notion of **functions** that work on numerical definitions of shapes or spatial distributions.

All of these can be expressed mathematically.

**Interested? Please do
contribute!**

**W3C Spatial Data on the Web
Interest Group** issue on GitHub:
<https://github.com/w3c/sdw/issues/1095>

**Or the OGC Geosemantics Domain
Working Group:**
<https://www.opengeospatial.org/projects/groups/semantics>

